

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/036,927
Filing Date: October 19, 2001
Applicant: Arnab DAS et al.
Group Art Unit: 2616
Examiner: Mohammad Sajid Adhami
Title: AN ADAPTIVE HYBRID RETRANSMISSION METHOD FOR
WIRELESS COMMUNICATIONS
Attorney Docket: 129250-002148/US

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July 30, 2008

Amendment in Response To Appeal Board Decision & Related To Petition to Revive

Sir:

Applicants are in receipt of the Board of Patent Appeals & Interferences Decision dated March 21, 2008 (“Decision”) and respond as follows.

Claim Amendments begin on page 2. **Remarks** begin on page 6.

| | Claims remaining after Amendment | | Highest number previously paid for | | Present extra |
|-------------|-------------------------------------|---|---------------------------------------|---|---------------|
| Total | 20 | - | 20 | = | 0 |
| Independent | 4 | - | 4 | = | 0 |

IN THE CLAIMS

The following is a complete listing of claims with a status identifier in parenthesis.

LISTING OF CLAIMS

1. (Currently Amended) A method for retransmitting information in a communication channel of a wireless communication system, the communication channel including a plurality of fixed length frames each divided into a plurality of time slots of equal duration, the method comprising:

transmitting a code multiplexed retransmission of a previous transmission within one of the fixed length frames using one or more of a plurality of codes using a transmitter used to transmit the previous transmission when no confirmation that the information previously transmitted was correctly received, wherein the number of codes used for the retransmission is variable based on the condition of the communication channel.

2. (Original) The method according to claim 1, wherein redundancy contained within the retransmission is a function of the number of codes used for the transmission.

3. (Original) The method according to claim 1, wherein the condition of the communication channel is determined by at least one of the factors selected from the group consisting of quality-based parameters and available resources within the communication channel.

4. (Original) The method according to claim 1, wherein each of the fixed length frames is capable of transmitting a combination of one or more signal transmissions selected from the group consisting of new transmissions and retransmissions of previous transmissions.

5. (Original) The method according to claim 1, wherein the number of codes is the same for a first transmission and a subsequent corresponding retransmission of the first transmission.

6. (Original) The method according to claim 1, wherein the number of codes used for a first transmission is different than the number of codes used for a subsequent corresponding retransmission of the first transmission.

7. (Original) The method according to claim 1, wherein a fixed length frame is capable of carrying multiple simultaneous transmissions by using one or more different codes for each of the multiple simultaneous transmissions.

8. (Original) The method according to claim 7, wherein the multiple simultaneous transmissions include a plurality of first transmissions from different users.

9. (Original) The method according to claim 7, wherein the multiple simultaneous transmissions include a plurality of retransmissions of previous transmissions from different users.

10. (Original) The method according to claim 7, wherein the multiple simultaneous transmissions include a plurality of retransmissions of previous transmissions from the same user.

11. (Previously Presented) The method according to claim 7, wherein the multiple simultaneous transmissions include first transmission and one or more retransmissions from the same user.

12. (Original) The method according to claim 7, wherein the multiple simultaneous transmissions include one or more first transmissions from one or more users and one or more retransmissions of previous transmissions from the one or more users.

13. (Original) The method according to claim 1, wherein the fixed length frames have a duration of 2 milliseconds and each of the plurality of time slots has a duration of .67 milliseconds.

14. (Currently Amended) A method for providing adaptive incremental redundancy in a communication channel of a wireless communication system, the communication channel including a plurality of fixed length frames, the method comprising:

in a fixed length frame, sending a fixed duration retransmission of a previous transmission in a domain selected from the group consisting of a code domain, a frequency domain, and a space domain using a transmitter used to transmit the previous transmission when no confirmation that the information previously transmitted was correctly received,

wherein the number of resources selected from the group consisting of codes, frequencies, and antennas that are used for the retransmission is variable.

15. (Currently Amended) A method for providing adaptive incremental redundancy in a communication channel of a wireless communication system, the communication channel including a plurality of fixed length frames, the method comprising:

in a fixed length frame, sending a fixed duration retransmission of a previous transmission in a domain selected from the group consisting of a code domain, a frequency domain, and a space domain using a transmitter used to transmit the previous transmission when no confirmation that the information previously transmitted was correctly received,

wherein a transmission format associated with the domain used for the retransmission is variable.

16. (Original) The method according to claim 15, wherein the transmission format in the code domain is defined by parameters including number of codes, modulation, and coding, wherein the transmission format in the frequency domain is defined by parameters including number of frequencies, number of codes, modulation, and coding, and wherein the transmission

format in the space domain is defined by parameters including number of antennas, number of codes, modulation, and coding.

17. (Currently Amended) A method for providing adaptive incremental redundancy in a communication channel of a wireless communication system, the communication channel including a plurality of fixed length frames, the method comprising:

in a fixed length frame, sending a fixed duration retransmission of a previous transmission in the code domain using a transmitter used to transmit the previous transmission when no confirmation that the information previously transmitted was correctly received,

wherein a transmission format used for the retransmission is variable.

18. (Original) The method according to claim 17, wherein the transmission format is defined by parameters including number of codes, modulation, and coding.

19. (Original) The method according to claim 18, wherein the transmission format is varied by changing one or more of the parameters.

20. (Original) The method according to claim 7, further comprising the step of transmitting a multi-level acknowledgement/negative acknowledgement (ACK/NACK) in response to multiple transmissions that occur in the same frame for the same user.

REMARKS

A. Claims 1-13 and 20

Claims 1-13 and 20 were originally rejected by the Examiner under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application No. 10/184,022 to Kwan (“Kwan”). In the Board’s Decision the Board took the position that the claims were not anticipated by Kwan. However, the Board raised a new ground of rejection, in sum, taking the position that these claims were rejected under 35 U.S.C. §103(a) based on the combination of Kwan with U.S. Patent No. 6,366,568 to Bolgiano (“Bolgiano”). Applicants respectfully disagree and traverse these rejections for at least the following reasons.

Original claims 1-13 and 20 were directed at a method for retransmitting information which includes, among other things, “transmitting a code multiplexed retransmission of a previous transmission...wherein the number of codes used for the retransmission is variable based on the condition of a communication channel.” The Board acknowledged that Kwan does not disclose the claimed retransmission methods either explicitly or inherently. Nonetheless, the Board took the position that Bolgiano discloses the claimed retransmissions. Applicants respectfully disagree.

The present specification explains that retransmission is a method to confirm “that information transmitted through a communication channel has been received without errors” (page 2, lines 8-10). In comparison, Bolgiano’s so-called retransmissions (referred to by the Board throughout the Decision) are not the retransmissions discussed in the present specification and referred to in the present claims because they are not related to a confirmation of correctly, or incorrectly, transmitted information. Instead, Bolgiano discloses three transmissions of the same original information signal, where all three transmissions are sent before any confirmation,

or lack thereof, is generated or received (*see for example*, Bolgiano,;...”three transmitted repetitions of the same information signal”, column 8, lines 39-41; “...the transmitted information rate is increased to allow the transmitted signal to be repeated three different times from three different antennas”, column 9, lines 58-62; and “Since the data is transmitted three times there will be three CDMA signals transmitted”, column 18, lines 2-4). Thus, even if linguistically the Board and Bolgiano (in its claims) may describe Bolgiano’s multiple transmissions of the same original transmission as a “retransmission” this does not mean that Bolgiano’s retransmissions are the same as the claimed retransmissions; in fact, they are not. At no time does Bolgiano discuss the transmission of an original transmission after confirmation that an original transmission has been received correctly or incorrectly. Instead, Bolgiano’s three transmissions are sent before any confirmation is received.

As the Board and the Examiner know well, while claims may be interpreted broadly, any interpretation must be consistent with the specification, *In re Hyatt*, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). It is respectfully submitted that interpreting Bolgiano’s transmission of three separate original transmissions as being the same as the claimed retransmissions is inconsistent with the specification. Further, it is respectfully submitted that those skilled in the art, upon reading the present specification and then reading Bolgiano, would not interpret Bolgiano’s multiple transmissions as being the same as the claimed retransmissions.

Notwithstanding the above discussion, to make the retransmission feature of the present invention clearer to the Examiner and Board, the Applicants have amended independent claims 1, 14, 15 and 17 to indicate that the claimed retransmissions occur “using a transmitter used to transmit the previous transmission [i.e., original transmission] when no confirmation that the information previously transmitted was correctly received”.

In conclusion, Applicants respectfully request reconsideration, withdrawal of the rejections and allowance of claims 1-13 and 20.

B. Claims 14-19

Claims 14-19 were originally rejected by the Examiner under 35 U.S.C. §103(a) as being unpatentable over Kwan in combination with Bolgiano. In its Decision the Board agreed with the Examiner's position. The Applicants respectfully disagree and traverse these rejections.

The basis for the Board's affirmation of the Examiner was the Board's position that Bolgiano disclosed the claimed retransmission methods.

Amended claim 14 includes, among other things, the feature of "sending a fixed duration retransmission of a previous transmissionusing a transmitter used to transmit the previous transmission when no confirmation that the information previously transmitted was correctly received." Thus, like independent claims 1, 15 and 17, claim 14 (and its dependent claims 15-19) is patentable over the combination of Kwan and Bolgiano for the reasons set forth above.

In conclusion, Applicants respectfully request reconsideration, withdrawal of the rejections and allowance of claims 14-19.

Conclusion:

Because neither Kwan nor Bolgiano, taken separately or in combination, discloses or suggests the claimed retransmission methods it is respectfully submitted that the claims of the present invention are patentable over the disclosures of Kwan or Bolgiano.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John E. Curtin at the telephone number listed below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 50-3777 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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